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## A Holistic Perspective on Indigenous Digital Libraries in Taiwan

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### Abstract:

*This paper reports on the development of Taiwan indigenous digital libraries representing fourteen groups with about five hundred and two thousand indigenous people. The study reviews 50 indigenous-related projects and initiatives in the Taiwan E-learning & Digital Archives Program (TELDAP), and concludes 5 findings of Taiwan's indigenous digital library, each demonstrates (1) the main constructors and their disciplines and professional backgrounds; (2) the models for indigenous community participation and engagement in digitization; (3) the characteristics of digital collection development; (4) the design and interoperability of metadata for digitized collections; (5) the access to the indigenous digital library. The main contribution of the study is to provide a regional depth exploration of Taiwan indigenous digital libraries using systematic approach, which will help establishing and linking a more comprehensive global indigenous digital library.*

**Keywords:** Indigenous Digital Libraries, Community Engagement

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### Introduction

There have been a number of literatures in the past decade related to indigenous digital libraries, especially in Africa, Asia, Oceania and North America. The issues of these types of research mainly involve: engagement, infrastructure, aggregation and activation. For instance, in light of engagement, Africa provides the model of user-generated content compiled in an indigenous digital library for community participation (Greyling & Zulu, 2010; Greyling & McNulty, 2012). Regarding infrastructure, the issues include digitization, access, preservation, intellectual property rights, and language usage, which are fundamental elements to build a digital library (Nakata, Nakata, Gardiner, McKeough, Byrne & Gibson, 2008; Farley, 1997; Burri-Nenova, 2008; Hunter, 2005). For instance, Keegan (2007), investigates how indigenous languages were used in a digital library environment of New Zealand. Toong Tjiek (2006) reports an initiative to document local information resources at

Petra Christian University in Indonesia through the implementation of an institute repository (IR) system.

Taiwan is thought to be the founding place of the Austronesian culture by the international academic Hawaiian linguistic expert Robert Blust (1988), Australian archaeologist Peter Bellwood (1980, 1983, 1988), and American human sociology scholar Jared Diamond (1988). The Taiwan indigenous tribes have preserved the ancient Austronesian language and its culture with their own language, folk culture, and tribal construct. The Harvest Festival and Ancestral Spirit Festival can best represent Taiwan's mysterious and diverse aboriginal culture with its various tribal totems. There are currently around 520,000 indigenous people in Taiwan recognized by the Taiwanese government. The 14 recognized indigenous tribes include the Amis, Atayal, Paiwan, Bunun, Rukai, Puyuma Tsou, Saisiyat, Yami (the Taos), Thao, Kavalan, Truku, Sakizaya and Sediq.

The study uses Taiwan e-Learning & Digital Archives Program (TELDA), the largest digital library project in Taiwan over the past decade, as a case study, adopting content analysis and observation methods. The study reviews 50 indigenous-related projects and initiatives in the TELDA, analysing each project's reports and related research papers, entering their databases and websites to observe the outcomes of each project. The study highlights 5 findings of Taiwan's indigenous digital library, each demonstrates the main constructors and their disciplines and professional backgrounds; the models for indigenous community participation and engagement in digitization; the characteristics of digital collection development; the design and interoperability of metadata for digitized collections; and the access and information retrieval system.

### **The Main Constructors and their Professional Backgrounds**

The Indigenous Digital Projects in Taiwan can be summarized into three types: first is the digitization of cultural artifacts, such as the "Digitizing Project on the Formosan Aborigines Collection of National Taiwan Museum – Ami Group" (NSC 97-2631-H-115-001); second is the value-added application and promotion of digital collections, such as the "Video Discs Production and Public Screening Project of Taiwan Ethnographic Documentaries in the 1930s – Paiwan Group" (NSC 97-2631-H-002-009); third is the basic research of digital libraries, for instance, research on the intellectual property rights of indigenous digital collections, the Union Catalogue and interoperable metadata standards.

The main constructors include university professors, museum curators, historical and cultural workers. The disciplines cover anthropology, communication studies, library and information science, museum studies, ethnomusicology, history, linguistics and information science. The study finds that different specialties of principal investigators (PIs) of the projects present the diversity of outcomes in depth. For example, PIs from the field of library and information science tend to focus on the design and analysis of complete digitization process and metadata sets for different types of digital collections, while PIs from anthropology focus on the data collected through field work, as well as how to cooperate with the local communities within the tribes, in order to enhance their cultural construction and identification.

### **The Models of the Indigenous Community Engagement**

The role of indigenous people in the digitization project can be classified into three models: (1) the project plays an active role, while the indigenous community passively participates; (2)

the indigenous community plays an active role, while the project is passive; (3) the indigenous community and the project plan and participate together. Related research findings are discussed below:

**(1) The project is active in planning, while the indigenous community passively participates**

Since the libraries, museums, and research organizations in Taiwan have accumulated a lot of aboriginal-related cultural artifacts, many institutions hope to fully digitize their collections by means of current digital technology, sharing the important cultural assets with the general public, and provides a more convenient channel for academia. Museums of anthropology or ethnology, in particular, choose the representative collections to be digitized systematically on a large scale. These projects are mostly targeted at the collections of a certain institution, focusing on the digitization itself, which mainly involves two levels: one is the digitization of actual artifacts, and the other is the creation of metadata as complete as possible for each artifact. Eventually, a digital library system is constructed through the planning of the museum curators, while the participation of the indigenous community is lacking. In other words, the indigenous community appears to be an object being archived in this kind of project, without giving opinions or participating in the project.

**(2) The indigenous community is active in planning, while the project passively participates**

Some indigenous communities are aware that they have to act in their own right, making the digitization project team accommodate their needs through providing related digital resources or activities. Taking the “Project on Storytelling Old Photos of the Paiwan People in Mu-Dan”(NSC 099-2631-H-002-045) for example, the locals took the initiative to suggest the public screening of digitized films, which was highly participated by the local indigenous communities, even drawing the attention of the media. What is more important is that a lot of local discussion was stimulated in this way with regard to the inheritance of history and culture and the application of digital archive results. This would help to build interactions and communications among different generations within the specific tribes. In this model, the digital library project serves more like the role of a recorder. For instance, in the abovementioned project, all the related information provided by the local indigenous people through the screening of films would be recorded by the project, and become the metadata of the digital archives database after being organized and verified. In terms of academic accumulation, the scholars of the project can probe into the process of knowledge production more than 50 years ago.

**(3) The indigenous community and the project plan and participate together**

Collaboration is the most common model in the indigenous digital library project of Taiwan, which includes two sub-models. The first is that the project group involves indigenous scholars, who can conduct research activities that demonstrate right of interpretation or autonomy when it comes to division of work. For example: the “Integrated Application and Promotional Screening Project of Audio-Visual Materials of Taiwan Pingpu Tribe in the 1930s” (NSC 98-2631-H-002-025) is jointly headed by an anthropologist from the National Taiwan University and a movie director of Pingpu-Kavalan ancestry. The indigenous director planned and filmed the documentary “Collected Ping-pu Memories – On Representing

Kavalan and Ketagalan Voices and Images” for this project, which was brought back to the tribe for screenings and seminars to reflect contemporary tribal people’s view of the film about the past, imparting new meaning to the digital collections. This type of sub-model will be able to respond to the anthropological reflection on ethnology and museum studies in recent years, deepening these interpersonal and person-object relations that emerge with the objects to further form the concept of “digital library as a contact zone”, which means by incorporating members of the tribe or community into the digital library and generating new explanations and dialogues, the collection’s social life can be continued and re-created.

The second sub-model is the principal investigator of the project maps out the whole framework and content of the digital library, and then invites local indigenous people to participate. For example, for the “Austronesian Music Museum: Digital Archives Project of Palau Music” (NSC 98-2631-H-003-006), the Palauan people also contribute by having local elders assist in understanding the content of song recordings, and traditional woman dance groups assisting the project team in digital filming. Therefore, they are members of the project as well, helping to perfect the content of digital archives.

### **The Characteristics of Digital Collection Development**

The digitized archives include a variety of resources of all indigenous groups that are mainly first- and second-hand data from collections in the museums at home and overseas, objects collected by universities and research institutions from the field, and collections gathered by local historical and cultural workers. The data types include: image (e.g., photos, films, slides, church murals, maps, collection routes, mapping manuscripts), moving image (documentaries), text (e.g., books, documents, magazines, bibliographies, contracts, manuscripts, jokes), sound (e.g., radio programs, songs, recordings of oral history, music), interactive resource (e.g., theme websites, e-books, internet platforms, Yami Language Learning Center), collection (e.g., local teaching materials), dataset (e.g., corpora, Geographic Information System for Language Distribution, Yami dictionary, Yami Fish Ontology), and physical object (e.g., costumes, life tools, religious and ceremonial objects).

The study observes that a number of digitization projects established digital libraries based on conducting systematic survey research of Taiwan indigenous cultural artifacts and image data that were scattered overseas. For example, one of the digital library project (NSC 96-3113-H-002-013) cooperates with the Department of Ethnology of the British Museum for studying and digitizing their Taiwanese ethnographic collections, which are about 400 pieces. These artifacts came from two major resources: (1) The specimens of cultural artifacts collected by those pioneer travelers, consolars, or missionaries who arrived in Taiwan around the second half of the 19th century and became famous in the field of Taiwanese history, such as Robert Swinhoe and William Campell; (2) Japan-British Exhibition, an international exhibition held in Shepard’s Bush, White City, London in 1910. More than 300 cultural artifacts brought from Taiwan for the exhibition were later collected by the British Museum.

It can be observed from the aboriginal-related projects joining TELDAP that the digital collections come from the academia, Council of Indigenous Peoples of the government, cultural heritage institutions, local indigenous people or studios, and through the international collaboration with the UK, Canada, US, Japan, Republic of Palau, and so forth, the collections can be digitized (NSC101-2631-H-001-014). There are more than 110,000 digitized materials, and over 30 databases and websites. It is obvious that the principal investigators through examining archives, analysing objects, taking photos, and developing

digital databanks and Internet connections, can enhance knowledge of the early Taiwanese material life, and create a better network to access information overseas.

### The Metadata for Digital Collections

The design of metadata in these projects shows a variety of practices. Each project can design their own metadata format and adopt different standard of controlled vocabularies according to the actual need. For example, a music-oriented project considers a full range of metadata types, including descriptive, administrative, and structural metadata (NSC 98-2631-H-003-006). In the meanwhile, one of the museum based projects only focuses on descriptive metadata, and, develops comprehensive elements to describe each item of the collection. Although there are different metadata formats belong to each digital library project, all of them need to contribute their digitized materials with metadata to the Union Catalogue while constructing their own databases and adapting their metadata formats into the Dublin Core standard (NSC 99-2631-H-115-002).

According to the study, each project would be based on at least one international standard, mainly Dublin Core (DC), Categories for the Description of Works of Art (CDWA), the CIDOC International Core Data Standard for Ethnology/Ethnography, MACHINE-Readable Cataloging (MARC), and then adapt or extend the metadata format according to individual need. Taking the “Digitizing Project on the Formosan Aborigines Collection of National Taiwan Museum – Ami Group” (NSC 97-2631-H-115-001) for example, in addition to using various standards such as DC, CDWA and CIDOC, it also adds some elements to match the collection management system of the museum, which can fully describe and reflect the historical depth of the collections. The established metadata elements include 11 main elements and 59 sub-elements. One of the main elements “function/meaning”, for example, have 7 sub-elements, which are: function, maker, technical method, user, usage/occasion, style/characteristic, and cultural meaning. These elements can all be mapped into the description element of the Dublin Core format. (For a more detailed example, please see “ceremonial pot” below: <http://catalog.digitalarchives.tw/item/00/3a/d9/30.html>)



Element (Data Structure)		Definition	Data Value (CV, Controlled Vocabulary)
Function /Meaning	Function	The actual use of the object	Ceremonial object (CV)
	Maker	The maker of the object	Only women can make pottery
	Technical Method	Techniques used to make the object	Hand built, fired (CV)

Element (Data Structure)		Definition	Data Value (CV, Controlled Vocabulary)
	User	Whether or not the object is only used by a certain class or gender in the culture	Priests (CV)
	Usage/Occasion	The method and occasion of using the object	Used by priests in ritual ceremonies
	Style/Characteristic	Evaluating the overall style of the object	This is a common type of ceremonial pot, which has a long spout and neck, the brim bent inward toward the upper half of the body and flared to form a shoulder, and then turned inward and expanded outward toward the bottom to make a corresponding lower half.
	Cultural Meaning	The meaning of the object in the culture	This is used by Ami priests in the ritual ceremonies to serve meat or alcohol. This is a common type of ceremonial pot, which has a long spout and neck, the brim bent inward toward the upper half of the body and flared to form a shoulder, and then turned inward and expanded outward toward the bottom to make a corresponding lower half.

### Access to the Indigenous Digital Library

The aboriginal-related digital resources produced by the TELDAP can all be searched and browsed through the portal “Taiwan Digital Archives” (<http://digitalarchives.tw/>). According to the study, there are four types of access as follows.

First is the Union Catalogue that shows the aggregation of indigenous digital assets; users can browse and access more than 110,000 digital objects by popular keywords or ethnic groups. Each record of the Union Catalogue contains: metadata based on the Dublin Core standard, digital images, resource links (directing to the original data for more detailed metadata content or larger image files), contacts for licensing, citations, recommended related collections, and social media functions (e.g., rating, recommendation). In addition, all of the digital objects are rights labelled, with more than one third of them in the public domain, including licensed under Creative Commons. Second is the presentation of indigenous digital resources through introductions and stories, providing related collections in the Union Catalogue as extended reading; for example: the origin of Paiwan people – hundred-pace snake marriage (<http://digitalarchives.tw/Exhibition/3083/1.html>).

Third is the theme websites that contain digital libraries and databases constructed by various projects, such as The Aboriginal Media Database in Lanyu (<http://lanyu.nctu.edu.tw/database/>). Fourth is a variety of creative value-added forms by cultural creative talents or teams to represent the achievement of indigenous digital archives. For example: The Adventure into Taiwan Indigenous Handicrafts (<http://digitalarchives.tw/Theme/Aboriginal/Handicraft/index.jsp>) is a game that introduces four indigenous handicrafts: weaving, pottery, sculpture, and embroidery based on the digital content of four indigenous digital libraries. Users can watch animation and take a quiz to collect treasures and accomplish the mission of each stage. In addition to the pictures of handicrafts and brief introductions, users can click “more information” to link to the specimens of collection items in “Taiwan Digital Archives” for their metadata. Through this game, users are able to learn knowledge related to indigenous handicrafts, and further understand the materials, techniques, and production procedures used by different ethnic groups, as well as the characteristics and meaning of their works. Furthermore, the TELDAP has formed a group to produce the publication Creative Comic Collection which invites cartoonists, illustrators, playwrights to use the Taiwan Digital Archives content to create a variety of indigenous topics. This model could be regarded a transformation from digital materials to a creative cultural product.

## **Conclusion**

This report has explored the development of the indigenous digital libraries under the Taiwan e-Learning & Digital Archives Program in the past 10 years. The study concludes five focuses which are: engagement, infrastructure, aggregation, activation and transformation. The focus of engagement summarises two types of main constructors and their disciplines, and three models for indigenous community participation during the digital project. The focus of infrastructure provides a close look at the characteristics of digital collection development, and the interoperable metadata design. The focus of aggregation depicts the Union Catalogue and theme websites mechanism. The focus of activation presents how the indigenous databases can be activated for publics. The focus of transformation further shows how digital materials can be transformed into a creative cultural product. The main contribution of the study is to provide a regional depth exploration of Taiwan indigenous digital libraries using systematic approach, which will help establishing and linking a more comprehensive global indigenous digital library.

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